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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/575,052

04/02/2007

Malcolm Lambert

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DELPHI TECHNOLOGIES, INC.
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EXAMINER

JONAITIS, JUSTIN M

ART UNIT

PAPER NUMBER

3752

MAIL DATE

DELIVERY MODE

02/26/2009

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/575,052	Applicant(s) LAMBERT ET AL.	
	Examiner JUSTIN JONAITIS	Art Unit 3752	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
- 4a) Of the above claim(s) 5-12 is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-4 is/are rejected.
- 7) ☒ Claim(s) 5-12 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 05 April 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. ____. |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>04/05/2006</u> . | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Claim Objections

1. Claims 5-12 are objected to under 37 CFR 1.75(c) as being in improper form because a multiple dependent claim 4. See MPEP § 608.01(n). Accordingly, the claims 5-12 have not been further treated on the merits.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1-4 are rejected under 35 U.S.C. 102(a) as being anticipated by U.S. Patent #6,427,932 to Danckert et al.

4. In re claim 1, Danckert et al. discloses an injection nozzle comprising:
 - a. A **nozzle body (valve seat (15))** with a bore defining a **valve seating surface (seal surface (16))** having a **seat cone angle ($\alpha 1$)**;
 - b. A **valve member (Needle (11))** which is movable within the bore;
 - c. Wherein the valve member includes an **upstream seat region (Top half of Transition Surface (111))** defining an **upstream cone angle ($\alpha 3$)**, the upstream cone angle and the seat cone angle together defining a first differential angle between them, and a **downstream seat region (lower half of sealing surface (13))** defining a **downstream cone angle ($\alpha 2$)**, the

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downstream cone angle and the seat cone angle together defining a second differential angle between them.

d. The valve member further having a **protruding annular ridge (defined by the lower half of transition surface (111) and top half of sealing surface (13))** intermediate the upstream seat region and the downstream seat region, wherein the protruding annular ridge defines a seating line (point where regions meet) having a seat diameter, the seat line being engageable with the valve seating surface to control the fuel injection from the nozzle body.

5. In re claim 2, Danckert et al. discloses the invention as described above including the protruding annular ridge having an **upstream ridge region (Lower half of Transition surface (111))** and a **downstream ridge region (upper portion of sealing surface (13))**; The seating line being defined at the intersection between the upstream and downstream ridge regions.

6. In re claim 3, Danckert et al. discloses the invention as described above including the valve member having a **circumferential groove (concave curve (19))** arranged downstream of the downstream ridge region and immediately upstream of a **further region (front end section (121))** wherein a lower edge of the circumferential groove and the further region define an intersection which defines, together with the seating surface a radial clearance that is sufficiently small so that a lower portion of the downstream ridge region defines a load bearing surface for the valve member.

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7. In re claim 4, Danckert et al. discloses the invention as described above including the upstream ridge region being immediately downstream of the upstream seat region and the downstream ridge region being immediately upstream of the downstream seat region.

Conclusion

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. U.S. Patent #6,565,017 to Fath et al. discloses a fuel injector with similar structure. U.S. Patent #6,669,117 to Boecking disclose a fuel injector with similar nozzle structure. U.S. Patent #7,404,526 to Cooke et al discloses a fuel injector with similar structure. U.S. Patent #6,892,965 to Haeberer et al. discloses a fuel injector with similar nozzle structure. U.S. Patent #5,890,660 to Stevens discloses a fuel injector with similar nozzle structure. U.S. Patent #4,470,548 to Ushimura discloses a fuel injector with similar structure. U.S. Patent #1,952,816 to Mock discloses a fuel injector with similar nozzle structure.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JUSTIN JONAITIS whose telephone number is (571)270-5150. The examiner can normally be reached on Monday - Thurs 6:30am - 5:00 pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Len Tran can be reached on (571)272-1184. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/JUSTIN JONAITIS/
Examiner, Art Unit 3752

/Len Tran/

Supervisory Patent Examiner, Art Unit 3752